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Environmental Health News

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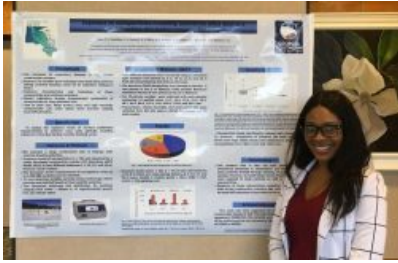
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Georgia Southern Student Wins Presentation Award at Southeast SETAC

November 3, 2017



The Society of Environmental Toxicology and Chemistry (SETAC) Southeastern Region organized their 15th Annual Meeting in Brunswick, Georgia on September 28-30, 2017. At the meeting, they held a competition for student presentations (<http://phhp-sesetac.sites.medinfo.ufl.edu/>). Ms. Imaobong Ekpo, an Environmental Health Sciences Masters of Public Health Student at the Jiann-Ping Hsu College of Public Health at Georgia Southern University and one of the students from Dr. Atin Adhikari's research team received a second place award for her poster presentation titled: Exposure to nanoparticles including submicron silica dust in a construction site during concrete blasting,

authored by Ms. Imaobong Ekpo, Mr. Jefferson Doehling, Dr. Abbas Rashidi, Dr. Aniruddha Mitra, Ms. Alexis Pawlak, Mr. Shane Lewis, Mr. Jacob Schwartz, and Dr. Atin Adhikari. The common idea is that the dust generated during mechanical processes in construction jobsites are mostly large particles formed through blasting, crushing, drilling, grinding, or sawing. However, field data obtained from this preliminary study of Dr. Adhikari's research team showed that workers were exposed to not only large particles but high levels of nanoparticles. Exposure to nanoparticles and submicron silica dust during construction activities like concrete blasting can be expected irrespective of proximity to the construction event.

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Georgia Southern Examines Aerosolized Bacteria and Microbial Activity in Dental Clinics

November 3, 2017



Dr. Atin Adhikari, assistant professor of environmental health sciences at the Jiann-Ping Hsu College of Public Health led a study that examined the aerosolized bacteria and microbial activity in dental clinics during cleaning procedures. Use of sharp instruments, handpieces, water-air sprays, and high speed rotary devices during dental cleaning procedures can release oral bacteria, which may cause significant occupational bioaerosol exposure risks. This study aimed at sampling of airborne bacteria and identification of prevalent bacterial genera and testing of overall microbial activity in settled splatter over clinic floors in several US dental clinic rooms during dental cleaning procedures (n = 15).

Culturable airborne bacteria were measured by a Biostage impactor and the diversity and relative abundance of the airborne culturable bacterial community were evaluated by pyrosequencing of 16s rRNA genes. ATP levels were determined in swabbed splatter samples collected from floor surfaces for understanding overall microbial activity and estimating the general cleanliness of the clinic surfaces. Concentrations at the beginning, during, and after dental cleaning procedures were 671 ± 525 , 917 ± 1203 , and 899 ± 823 CFU/m³, respectively for airborne bacteria and 91 ± 101 , 243 ± 129 , and 139 ± 77 RLU/sample, respectively for ATP levels on floors. The dominant bacterial phylum was *Proteobacteria*. A total of 45 bacterial genera were detected, notable among them included *Psychrobacter*, *Pseudomonas*, *Sporosarcina*, and *Streptococcus*. Several pathogenic bacterial species such as *Psychrobacter* sp. (including *P. pulmonis*, and *P. faecalis*), *Streptococcus* sp. (including *S. thermophiles*, *S. parasanguinis*, and *S. oralis*), *Pseudomonas* sp. (including *P. graminis*) were identified in air samples collected at different stages of the dental cleaning procedures.

The concentration of airborne bacteria in dental clinic rooms did not increase significantly during the cleaning procedures. The diversity of culturable bacteria, however, changed. This change in the diversity and the similarity in major taxa detected in the study to the bacterial taxa reported recently from acute or chronic root canal infections and supragingival plaque samples indicate that oral bacteria from patients can significantly contribute to airborne bacterial load in dental clinics during cleaning procedures.

[“Aerosolized bacteria and microbial activity in dental clinics during cleaning procedures,”](#) was recently published in the Journal of Aerosol Science.

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